

45
Minutes

LESSON 8: WASTE MINIMIZATION

Introduction.

Waste minimization concepts and techniques have been incorporated into the preceding sections of this course. It is important to realize that waste minimization is not a stand alone topic. Waste minimization is analogous to safety; that is, it is a way of thinking, a way of doing business on a day-to-day basis, the way you choose to carry out your job.

Pollution prevention is emerging as a top priority on environmental agendas throughout the country. Congress and the Environmental Protection Agency have recognized the important leadership role which Federal agencies must play in the pollution prevention arena. The Department of the Interior has made pollution prevention its number one approach to waste management. Secretarial Order No. 3158 dated December 14, 1992 announced the Department's comprehensive approach to waste management. You will find it in your notebook.

Higher treatment and disposal costs, not to mention fewer disposal options, are making pollution prevention an economic necessity. In addition, there are the financial liabilities associated with disposal and releases of hazardous waste. Many organizations are reeling from the magnitude and cost of cleaning up wastes already generated, including wastes that were disposed of legally using best management practices at the time. A policy of prevention places the focus on reducing and eliminating waste at the source rather than on end-of-pipe and end-of-stack treatment and disposal of wastes.

Overhead Pollution prevention and waste minimization involve
No. 1 fundamental changes in institutional culture. They require a change in attitude on the parts of both management and employees. Moreover, pollution prevention and waste minimization are value added efforts. They lead to improved productivity, efficiency and effectiveness; and better cost and liability control within the organization.

Overhead One objective of this course is to persuade you to go
No. 2 back to your work places and take a fresh look at what's being done and think about how you
 can reduce waste. No one knows your job better than you do. No one knows where
 and how to make improvements better than you do.

Background and Definitions.

In the Pollution Prevention Act of 1990, Congress declared that it is "the national policy of the United States that pollution should be prevented or reduced at the source whenever feasible; pollution that cannot be prevented should be recycled in an environmentally safe manner, whenever feasible; and disposal or other releases into the environment should be employed only as a last resort and should be conducted in an environmentally safe manner."

Overhead Pollution Prevention -- Is the use of processes,
No. 3 practices or products that reduce or eliminate the generation of pollutants and wastes or that
 protect natural resources through conservation and more efficient use. Pollution
 prevention is an umbrella concept; the goal is to prevent pollution before it is created.
 Waste minimization and conservation are two aspects of pollution prevention. It also
 encompasses the ideas of volume reduction (i.e., reducing total volume or quantity of
 waste) and toxicity reduction (i.e., reducing toxicity of waste).

Overhead Waste Minimization -- Means the reduction, to the extent
No. 4 feasible, of any solid or hazardous waste that is generated or subsequently treated, stored or
 disposed of. It consists of source reduction and recycling. Of the two approaches,
 source reduction is usually preferable to recycling from an environmental perspective.

Overhead Source Reduction -- Is any activity that reduces or
No. 5 eliminates the generation of waste at the source. Source reduction techniques include good
 operating and housekeeping practices, technology changes such as process and
 equipment modifications, and input material changes such as product substitution.

Overhead
No. 6 Examples of source reduction:

Operating practices

Work Planning and Sequencing -- Assessing the size of a job before mixing paint, asphalt or concrete; and mixing just enough for the job at hand so that none is left over to become waste.

Input material changes

Product Substitution -- Switching from solvent-based cleaners to water-based cleaners, thus eliminating a hazardous waste.

Overhead
No. 7 Recycling -- A waste material is recycled if it is reused or reclaimed. Recycling via reuse involves the return of a waste material for use again. Reclamation is the recovery of a valuable material from a waste stream or regeneration of a waste.

Overhead
No. 8 Recycling examples include:

Reuse

Collecting used antifreeze and oil for reprocessing.

Reclamation

Recovering silver from rinsewater from film processing; the wastewater can then be discharged to the sanitary sewer without additional pretreatment.

Implementation.

For waste minimization to be successful, it requires careful planning, creative problem solving, changes in attitude, sometimes capital investment and, most important, a real commitment. Again, waste minimization is a value added effort.

Handout The most logical way to begin is to fall back on some simple and common sense ideas. Post this goldenrod paper at your workstation to remind you of things you can do to minimize waste.

Product Substitution -- Substitute less toxic products where feasible.

- ! Work with your procurement officer and vendors to find less toxic products. The reduced cost of disposal and the reduced exposure of workers to a toxic material can justify the change. Keep in mind, however, that sometimes you are trading one hazard for another; and some substitutes may not be as effective as the original product. Try out substitute products before you make a firm commitment to change.
- ! If you have tried "environmentally friendly" products and have results to report (good or bad), you are urged to share this information with others. To facilitate information exchange, Mark Phillips of the Glennallen District Office has agreed to collect information and recommendations about the effectiveness of less toxic substitutes for chemical products used in the BLM. You will find his address and telephone number in your notebook. The information he collects will be compiled and disseminated through information bulletins and program workshops.

Product Streamlining -- Reduce to a minimum the number of different products used (i.e., cleaning fluids, cutting oils, etc.).

- ! Streamlining mitigates shelf-life problems and reduces the number of partially used containers to dispose of.

NOTE: Keep in mind that you should always use a product the way it is intended to be used.

Purchasing Control -- Purchase only the amounts absolutely needed.

- ! Frequently, supplies are bought based on minimizing initial purchase price without considering the "total cost" or "life cycle cost" of using the product. The total or life cycle cost includes purchase price, labor cost, disposal cost, and liability for mismanagement of the waste.

- ! Buy in container sizes appropriate to the actual use. It can be less expensive to buy a pint or quart container of a perishable material than to purchase a gallon or drum of that product at a lower unit cost and later have to dispose of the unused portion.

Material Management -- Improve material receiving, storage and handling practices to reduce damage and loss.

- ! Many organizations do not put a high enough priority on shipping and receiving operations. These areas are often understaffed and workers are often undertrained. This area deserves more attention than it usually gets.
- ! Inspect incoming shipments for damage and refuse to accept any packages or containers that are not intact. Check the labels and material safety data sheets for handling and storage requirements.

Material Separation -- Separate incompatible products and hazardous from nonhazardous materials.

- ! Incompatible materials which come in contact contaminate each other and may create safety hazards such as fire, explosion or disaster hazards.
- ! Check the labels and material safety data sheets for incompatibility information.
- ! If a hazardous material contaminates a nonhazardous material, the resulting mixture, if no longer a useful product, becomes a hazardous waste.

NOTE: "A strong reminder about the fatal consequences of mixing household cleaning products: A 72-year-old woman in Oregon died of chlorine gas poisoning while cleaning her bathtub, according to Medical Examiners and Coroners Alert Project. The deadly gas was released when the woman used a combination of bleach, cleanser, ammonia and drain cleaner to clean the bathtub." The Washington Post, November 10, 1992.

Material Rotation -- Rotate perishable material from back to front of storage when new material is received.

- ! In order to prevent useful products from becoming wastes because their shelf-life has expired, rotate old containers from the back of shelves to the front when new material is received.
- ! Keep in mind, however, that many products are good beyond their expiration date. The Department of Defense requires a shelf-life of two years, and many manufacturers date stamp their products for two years even though they will last much longer. DOD routinely extends the useful life of the product, especially for non-critical functions.

Proper Storage -- Store at proper environmental conditions.

- ! Many products degrade at environmental extremes (i.e., heat, cold, humidity). Others create fire, explosion or disaster hazards under certain environmental conditions.
- ! Check the labels and material safety data sheets for storage requirements.

Housekeeping Practices -- Improve housekeeping and provide an organized and neat work environment.

- ! Excessive waste often results from sloppy housekeeping practices. Leaking tanks, valves or pumps can cause spills requiring costly clean up and disposal of wastes. Poor cleaning of parts can reduce the useful life of equipment
- ! Key advantages of housekeeping changes is that they usually can be implemented quickly, they require little if any capital investment, and they are likely to result in substantial reduction in wastes.

Preventive Maintenance -- Maintain a strong preventive maintenance program.

- ! Preventive maintenance has risen from being a lowly regimen to a key program in most organizations. It pays for itself many times over in increased operational productivity, reduced downtime for corrective maintenance, and reduced costs for raw materials and waste disposal. New technologies such as vibration analysis, in which changes in vibration frequency indicate when equipment needs maintenance, have given preventive maintenance a higher profile.

Work Planning -- Plan and sequence work to reduce leftover products and materials.

- ! Frequently, changes that result in waste reduction can result in productivity improvements as well.

Waste Segregation -- Segregate and separate hazardous from nonhazardous wastes.

- ! Wastes that require special treatment or disposal should be separated from other wastes. Keep in mind that mixing a regulated hazardous waste with a nonhazardous waste renders the whole mixture legally hazardous.
- ! Never allow one hazardous waste to contaminate another hazardous waste. Besides possible incompatibility problems, mixing makes it more difficult to recycle or dispose of the waste.

Recycling -- Recover and reuse waste materials for the original or some other purpose.

- ! It is often less expensive to recycle a chemical than to pay for disposal costs. Many communities and private companies provide recycling services.

Equipment and System Assessments -- Assess the necessity of using waste generating equipment and systems, and look for alternatives, including eliminating the activity or contracting it out. (Similar to process evaluation in the manufacturing sector.)

- ! Make a critical evaluation of the necessity and advisability of carrying out particular activities in-house (e.g., vehicle maintenance, refueling). Is there a way to do it better? What is the potential for unsafe acts or unsafe conditions?

- ! Can these activities be eliminated or contracted out? Often a contractor has a sizable enough operation to achieve economies of scale through waste reduction investments.

Cost Accountability -- Assign the total cost of carrying out an activity to that activity, including the cost of using chemical products or hazardous materials and the cost of disposing of spent product or hazardous waste.

- ! Making sure that managers and employees know the total "true" cost of carrying out an activity will provide an incentive to look for alternatives and reduce wastes.
- ! Consider all the ancillary costs of purchasing and cleaning or disposing of personal protective equipment such as gloves and goggles.

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**Send your results and recommendations regarding
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**Mark Phillips
Glennallen District Office
P.O. Box 147
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